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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/835,543	04/17/2001	Douglas Richardson		5398

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EXAMINER

KIM, RICHARD H

ART UNIT PAPER NUMBER

2882

DATE MAILED: 04/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/835,543

Applicant(s)

RICHARDSON, DOUGLAS

Examiner

Richard H Kim

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 5, 9 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Welch et al. (U.S. 5,255,332).

Referring to claims 1, 5, 9 and 13, Welch et al. discloses an optical crossbar switch with a plurality of selectable reflective optical switching elements, wherein a selected input beam is focused on a first selectable reflective optical switching element; and a second reflective optical switching elements is selected in which the selected input light beam is focused on the second selected reflective optical switching element (see col. 5, lines 24-43 and col. 3, lines 4-10). Welch et al. further discloses the optical crossbar is configured such that the reflective optical elements can be alternately selectable and interposable in the path of a selected input beam and more than one of the selectable reflective optical elements are located with the range over which the adaptive optical element is capable of focusing the selected input light beam (see Fig. 1, col. 5, lines 50-60, col. 6, lines 1-17, 23-27).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 2, 4, 6, 8, 10, 12, 14, 16, 17, 19, 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Welch et al. in view of Iida et al (U.S. 5,751,420).

Welch et al. discloses the optical crossbar switch described above. However, Welch et al. fails to disclose the focusing comprises varying the focal length of an adaptive optical element comprising of a variable lens.

Iida et al. discloses a variable lens whose focal length is continuously variable (see col. 2, lines 19-22).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the focusing comprise of varying the focal length of an adaptive optical element since such a modification would increase the efficiency of the device since varying the focal length would enable focusing without having to physically move the selected reflective switching element or the focusing lens to vary the focal length. Further, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the adaptive optical element comprise of a variable lens since such a modification would increase the efficiency of the device by enabling the focal length to be varied without having to replace the lens to match the focal length corresponding to a selected reflective switching element.

4. Claims 3, 7, 11, 15, 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Welch et al. and Iida et al. in view of Nishikawa et al. et al. (U.S. 5,498,868)

Welch et al. and Iida et al disclose the optical crossbar switch disclosed above. However, the references do not disclose the apparatus comprising of a variable mirror device.

Nishikawa et al. discloses a variable focus mirror whose focal length continuously changes (see col. 4, lines 36-40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the adaptive optical element comprise of a variable mirror device since such a modification would increase the efficiency of the device by enabling the focal length to be varied without having to replace the mirror to correspond with the position of a selected reflective switching element. Further, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the adaptive optical element comprise of a variable mirror device since such a modification would increase the versatility of the device since the mirror can also act as a directional guide for the input light beam.

5. Claims 20 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Welch et al. and Iida et al. in view of Silver (U.S. 6,188,525 B1).

Welch et al. and Iida et al. discloses the optical crossbar switch disclosed above. However, the references do not disclose the variable lens as being a variable micro-machined membrane lens.

Silver discloses a variable membrane lens (see abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a micro-machined variable membrane lens in order to increase efficiency since changing the focal length of the device would not require having to physically

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change the position or orientation of the lens. Further, it would have been obvious to one having ordinary skill in the art at the time the invention was made to micro-machine the membrane lens since the lens need only accommodate the width of the input light beam. Since most light beams in optical devices are of the micron level, it would have been obvious to have a lens on the same scale in order to avoid unnecessary added cost. Therefore, a micro-machined membrane lens would be an efficient component to the optical crossbar switch.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard H Kim whose telephone number is (703)305-4791. The examiner can normally be reached on 8:30-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on (703)305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Richard H Kim
Examiner
Art Unit 2882


ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

• Application/Control Number: 09/835,543
• Art Unit: 2882

R.K.
April 19, 2002